

AMENDMENT UNDER 37 C.F.R. § 1.114(c)
U.S. Application No. 09/256,346

REMARKS

Reconsideration and allowance of the subject application are respectfully requested. By this Amendment, Applicant has canceled claims 10-15. Thus, claims 1-9 and 16-19 are now pending in the application. Applicant respectfully submits that the pending claims define patentable subject matter.

Claims 1-4 and 8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over newly cited Mihara (JP 405303076) in view of Okada et al. (USP 4,8000,382; hereafter “Okada”). Claims 7 and 9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Mihara in view of Okada and Surguy (USP 5,233,338). Claims 10, 11 and 12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ito et al. (USP 6,172,662; hereafter “Ito”). Claims 13 and 15 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ito in view of Surguy. Applicant respectfully traverses the prior art rejections.

Amended independent claim 1 is directed to “[a] method for driving an active-matrix liquid crystal display apparatus without intrinsic memory effect”. Claim 1 requires:

scanning successively a plurality of scan lines in a first field of a frame for display;

simultaneously resetting a voltage difference between pixel electrodes and common electrodes in the first field after the scan lines are successively scanned in the first field;

scanning successively the scan lines in a second field of the frame for display in an order reverse to that in the first field; and

simultaneously resetting a voltage difference between pixel electrodes and common electrodes in the second field after the scan lines are successively scanned in the second field.

AMENDMENT UNDER 37 C.F.R. § 1.114(c)
U.S. Application No. 09/256,346

Both Mihara and Okada teach a ferroelectric liquid crystal (FLC) having an intrinsic memory effect driven by two voltages. As a result, only black or white can be displayed by the devices of Mihara and Okada.

According to the present invention, the liquid crystal display, such as V-character type FLC, V-character type anti-FLC and OCB crystal display, is driven by an analog voltage thereby enabling to display an analog gray scale levels, which do not have an intrinsic memory effect. Therefore, the present invention having the driving method by an analog voltage is clearly different from the cited references having the driving method by the two voltages.

Mihara and Okada teach a simple matrix LCD having two substrates. One of the substrates has scanning lines disposed thereon in stripes, and the other substrate has data lines disposed thereon in stripes. The scanning line and the data lines are arranged to oppose each other in a matrix having cross-points. The LCD is directly driven by a voltage difference between the scanning lines and the data lines.

According to the present invention, the active matrix driving method drives the LCD. The substrate has the scanning lines and the data lines disposed in a matrix thereon. The switches are disposed on cross-points of the scanning lines and the data lines. The pixel electrodes connected to the switches are disposed in matrix. The other substrate has the common electrodes thereon opposing to the pixel electrodes. The switches are turned on and off by changing voltages between the scanning lines and the data lines, a desired data voltage is applied to the pixel electrodes. The liquid crystal is driven by a difference of potential between the voltage applied to the pixel electrodes and the common electrodes.

AMENDMENT UNDER 37 C.F.R. § 1.114(c)
U.S. Application No. 09/256,346

On the other hand, Mihara and Okada teach a driving method by simply driving a voltage difference between the scanning lines and the data lines.

The LCD according to the present invention, the potential of the pixel electrodes between the data electrodes and the scanning electrodes is changed. The LCD is then driven by a difference of potential between the pixel electrodes and the common electrode.

The claimed invention is directed to a method for driving an active matrix LCD having a difference in resetting function.

In the cited references, a driving potential of the LCD is directly determined between the scanning lines and the data lines. This means that a resetting voltage is determined by either one of the scanning lines or the data lines, or by both lines.

According to the present invention, a difference of potential between the common electrodes voltage and the pixel electrodes define both ends of the liquid crystals via the switches controlled by the scanning lines and a potential supplied from the data lines to the pixel electrodes. The difference of potential between the pixel electrodes and the common electrodes define the reset voltage. Therefore, driving method of the present invention differs from the cited references, the adjustment method of resetting potential, and their resetting electrodes are different.

Thus, Applicant respectfully submits that the combined references fail to teach or suggest “[a] method for driving an active-matrix liquid crystal display apparatus without intrinsic memory effect”. Further, the cited references fail to teach or suggest “simultaneously resetting a voltage difference between pixel electrodes and common electrodes in the first field after the

AMENDMENT UNDER 37 C.F.R. § 1.114(c)
U.S. Application No. 09/256,346

scan lines are successively scanned in the first field" and "simultaneously resetting *a voltage difference between pixel electrodes and common electrodes* in the second field after the scan lines are successively scanned in the second field."

Accordingly, Applicant respectfully submits that claims 1-9 should be allowable because the cited references, alone or in combination, do not teach or suggest all of the features of the claims.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Christopher R. Lipp
Registration No. 41,157

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE
23373
CUSTOMER NUMBER

Date: April 26, 2005

Attorney Docket No.: Q53397